Fellows at ESO

Pamela Klaassen

Picture it: the first day of school in suburban Toronto, 1996. A physics teacher at the front of the classroom with a bow tie and monotone voice (think Ben Stein in *Ferris Beuller's Day Off*), and a 17 year old girl sitting down at her desk saying, "Well, let's see if I like this, 'cause it's what I'm doing with the rest of my life". And so, my career as an astronomer began.

A few years later, I did my undergraduate and Master's degrees at the University of Calgary. As an undergraduate, I did manage to do a few nights of observing at an optical telescope, but I soon swayed over to the dark side (radio astronomy), and haven't really looked back since. Then one day, on the road up to the summit of Mauna Kea to start some observations on the JCMT, my supervisor (Rene Plume) asked me where I wanted to do my PhD. I think he was trying to get rid of me. Apparently though, some good decisions CAN be made at 4000 m, because I contacted Christine Wilson later that evening, and started as her PhD student about a year later; with the *caveat* that she would be on sabbatical for my second year. This gave me license to go on a sort of graduate student sabbatical of my own, and I headed to the Harvard–Smithsonian Center for Astrophysics for a one year Sub-mm Array (SMA) pre-doctoral fellowship (with Eric Keto). Instead of being one of three radio astronomers on campus, I was in a building dedicated to radio astronomy. It was great! After that year, I dutifully returned to McMaster University with a new-found appreciation for radio interferometry. Two years later (which takes us to 2008), I finished my PhD, and moved to ESO.

For most of my career, I've been studying the gas dynamics in regions of our Galaxy forming massive stars. I started out only studying the large-scale outflow structures. But, as I gained knowledge, I started asking more questions, and writing more observing proposals, and asking more questions, and... the cycle continues to this day. I've now broadened my research interests to studying the dynamics of the gas in a variety of ways. This includes not only looking at the outflowing gas, but the infalling gas and rotation in and around the star-forming regions. I do

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this by looking at the small-scale structures with interferometers, and the large-scale structures both with single-dish telescopes and combinations of interferometers and single dishes (to see the large-scale structures at high resolution). Recently, I've started probing the relationship between the ionised and molecular gas in regions forming massive stars, and how the bulk gas kinematics described above change across the ionisation boundary. (FYI — it doesn't look like much changes!)

Since arriving at ESO, I've become involved in the ALMA project, and have had the opportunity to learn all about the software under development by becoming a tester of the Observing Tool, and giving lectures on how to use the data reduction software (CASA). I'm really looking forward to putting the skills I've learned here at ESO to good use when ALMA comes online next year.

Rodolfo Smiljanic

When I was eleven years old, I had the chance to do a course on basic astronomy at the planetarium in my home town in Brazil. There I also looked through a telescope for the first time. The images I saw that night are still imprinted on my mind. Two years later, I read in a magazine an article entitled: *How to become a professional astronomer*. That was the true turning point, where the path to becoming a professional astronomer became clear to me.

This path first led me to the Valongo Observatory of the Federal University of Rio de Janeiro for an astronomy undergraduate degree. I first wanted to be a cosmologist, but that changed in my first month of studies. During a class I was told that it was possible to infer the chemical composition of the stars from their spectra! I was so excited by this amazing idea that I immediately knew that my days as a cosmologist were over; I would become a stellar astrophysicist. There I had my first research experience, studying the abundance of heavy *s*-process elements in chemically peculiar barium giant stars. For this research I analysed FEROS spectra, and that was probably the first time I heard about ESO. The years I spent at the Valongo Observatory were very important for me and I cherish them a lot.

Later I moved to the University of São Paulo, first for an MSc in astrophysics and then for a PhD. During those years I changed my focus from the heavy elements to the lighter ones. It was during my PhD that I had my first chance to come to ESO. In 2006, I came with a Brazilian studentship to stay for one year and work on the use of stellar beryllium abundances as a cosmochronometer. The scientific environment in ESO made a great impression on me. I went back to Brazil to finish my PhD, hoping that one day I would be able to come back to ESO.

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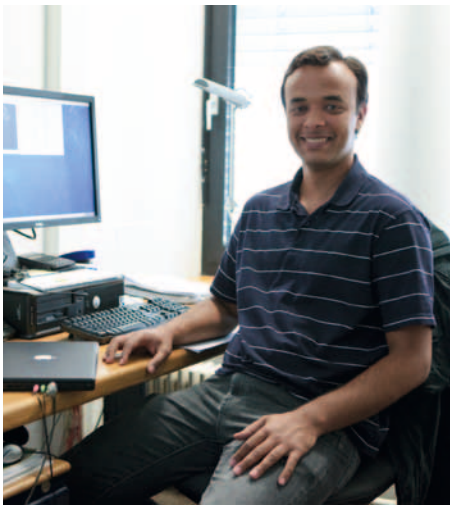

The chance for that appeared one month after my PhD defense. On the day before my birthday I received the fellowship offer, which I promptly accepted. I started as a fellow in Garching in October 2009, after a nine months postdoc in Brazil. In my research, I use high resolution spectroscopy to determine stellar chemical abundances and investigate the physical processes affecting the structure and the evolution of low- and intermediate-mass stars. I am also interested in understanding the chemical evolution of the Galaxy better. For my functional duties I joined the User Support Department. I am now helping to support service mode observations using UVES at the VLT. It was a long and challenging, but also rewarding, path from a small telescope and a planetarium to being part of ESO, a world-leading observatory where I can work with one of the largest and most modern telescopes ever built.

Announcement of the ESO Workshop

Dynamics of Low-Mass Stellar Systems: From Star Clusters to Dwarf Galaxies

4–8 April 2011, ESO Santiago, Chile

At the low-mass end of stellar systems, there used to be a well-known dichotomy. On the one hand, there are star clusters with typical sizes of a few parsecs (pc), whose internal dynamics can generally be well described by the Newtonian gravity law. On the other hand, there are the much more extended dwarf galaxies with sizes of several hundred pc, whose dynamics appear to be dark matter dominated and which are usually related to cosmological substructures. These classical boundaries have been blurred by the recent discovery of new classes of stellar groupings, such as ultrafaint dwarf spheroidal galaxies (dSphs), ultramassive super star clusters, ultra compact dwarf galaxies (UCDs), and dark-matter-poor tidal dwarf galaxies (TDGs). These discoveries and the confirmation of multiple stellar populations in a number of Galactic globular clusters have reinforced the question, to which extent star clusters and dwarf galaxies actually share common origins and are intimately linked in their dynamical evolution.

In this context, recent years have seen a particularly large effort in the astronomical community to thoroughly investigate the internal dynamics of low-mass stellar systems in the Milky Way and Andromeda. Extensive measurements of dwarf spheroidal galaxy kinematics have yielded crucial input for structure formation theories, particularly on the clustering properties of dark matter on small scales. Similar observing campaigns regarding Milky Way star clusters are providing strong constraints on theories of modified gravity and on the shape of the black hole mass–sigma relation at low masses. Proper motion studies of the Galactic halo have revealed a marked phase-space correlation of dSph orbits, which is challenging canonical structure formation paradigms, and alternative explanations to dark matter have been put forward regarding the large velocity dispersions found for dSphs.

Beyond the Local Group, space-based imaging has been extensively used to investigate the dynamical evolution of star cluster populations in a number of star-forming galaxies. The initial cluster mass function is distinctly different from the mass function of old globular clusters, which is still not very well understood. Also, star clusters and dwarf galaxies have been used as dynamical tracers in galaxies and galaxy clusters, constraining the gravitational potential on large scales. Finally, peculiar internal dynamics were found for UCDs — objects at the phase transition between star clusters and dwarf galaxies — suggesting either dark matter clustering on scales below those suggested for dSphs, or a significant variation of the initial mass function.

All this shows that the dynamics of low-mass stellar systems is not only an interesting subject in its own right, but is also intimately linked to global theories of structure formation, the physics of gravity, and the shape of the stellar initial mass function. Given the wealth of new information gathered most recently in this field, the time is ripe to hold a dedicated meeting on this topic. We aim at bringing together a mix of astronomers from both observations and theory who work on the dynamics of dwarf galaxies and star clusters.

The scientific organising committee consists of: Holger Baumgardt, Australia; Giovanni Carraro, ESO; Michael Fellhauer, Chile; Mark Gieles (co-chair), UK; George Hau, ESO; Michael Hilker, ESO; Helmut Jerjen, Australia; Steffen Mieske (co-chair), ESO; Yazan Momany, ESO; Ivo Saviane, ESO; Michael West, ESO; Mark Wilkinson, UK.

The local organising committee consists of: Karla Alamo, María Eugenia Gómez, Valentin Ivanov, Lucie Jílková, Paulina Jirón, Renee Mateluna, Steffen Mieske.

The workshop, limited to 60–80 participants, will take place at the ESO premises in Santiago, Chile.

Further details are available at http://www.eso.org/sci/meetings/dynamics2011/.

The deadline for registration is 15 January 2011. Further information can be obtained from dynamics2011@eso.org.